

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 11-2C-17  
VOLUME 3 ADDENDA-C**



**14 NOVEMBER 2013**

***Flying Operations***

***C-17A ANTARCTIC OPERATIONS***

---

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

---

**ACCESSIBILITY:** Publications and forms are available for downloading or ordering on the e-Publishing website at [www.e-Publishing.af.mil](http://www.e-Publishing.af.mil)

**RELEASABILITY:** There are no releasability restrictions on this publication.

---

OPR: HQ AMC/A3V

Certified by: HQ USAF/A3O-A  
(Brig Gen Steven M. Shepro)

Pages: 18

---

This supporting instruction implements AFD 11-2, *Aircraft Rules and Procedures*, and is incomplete without AFI 11-2C-17V3, *C-17 Operations Procedures*. It establishes aircrew procedures for the operation of C-17 aircraft for operations in Antarctica. This instruction does not apply to Air National Guard (ANG) units.

Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located in the Air Force Records Information Management System (AFRIMS).

Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, *Recommendation for Change of Publication*; route AF IMT 847s from the field through the appropriate chain of command. Forward requests for a copy of this document (with justification) to HQ AMC/A3V (copy to HQ AMC/A3V), 402 Scott Drive, Unit 3A1, Scott AFB IL 6225-5302. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

<b>Chapter 1—GENERAL</b>	<b>3</b>
1.1. Overview. ....	3
1.2. Mission Description. ....	3
1.3. Specialized Terms. ....	3

1.4.	Command, Control, and Communications. ....	4
1.5.	Mission Planning, Briefings, and Guides. ....	5
1.6.	Aircrew Management. ....	5
1.7.	ODF Aircraft Operating Restrictions. ....	5
1.8.	ODF Specific Waivers. ....	6
<b>Chapter 2—</b>	<b>AIRLAND OPERATIONS</b>	<b>8</b>
2.1.	Mission Commander Launch Decision. ....	8
2.2.	Christchurch Launch Weather Minimums. ....	8
2.3.	Point of Safe Return Fuel Planning. ....	8
2.4.	Point of Safe Return Weather Minimums. ....	9
2.5.	McMurdo Arrivals and Instrument Approach Procedures. ....	10
2.6.	Ground Operations. ....	10
2.7.	McMurdo Area Airfield Departure Weather Minimums. ....	10
<b>Chapter 3—</b>	<b>AIRDROP OPERATIONS</b>	<b>11</b>
3.1.	General. ....	11
3.2.	Christchurch Airdrop Launch Weather Minima. ....	11
3.3.	Mission Computer Anomalies. ....	11
3.4.	Drop Zone Surveys and Markings. ....	11
3.5.	Airdrop configurations. ....	11
3.6.	Emergency Airdrop Operations. ....	12
<b>Chapter 4—</b>	<b>NIGHT VISION GOGLES (NVG) OPERATIONS</b>	<b>13</b>
4.1.	General. ....	13
4.2.	Mission Planning. ....	13
4.3.	Christchurch NVG Launch Weather Minima. ....	13
4.4.	NVG Operating Restrictions. ....	13
4.5.	Emergency NVG Operations. ....	13
<b>Attachment 1—</b>	<b>GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION</b>	<b>15</b>
<b>Attachment 2—</b>	<b>ODF C-17A SEQUENCE OF EVENTS</b>	<b>16</b>
<b>Attachment 3—</b>	<b>AIRFIELD, SERVICES, AND AIRCRAFT GO/NO-GO DECISION MATRIX</b>	<b>17</b>
<b>Attachment 4—</b>	<b>WEATHER GO/NO-GO DECISION MATRIX</b>	<b>18</b>

## Chapter 1

### GENERAL

#### 1.1. Overview.

1.1.1. Applicability. These procedures provide guidance to plan and execute C-17 airlift and airdrop operations on the continent and surrounding waters of Antarctica. Use these procedures in conjunction with the flight manual and mission operating directives. Training should be planned and executed to meet joint tasks, conditions and standards (TCS) when applicable.

1.1.2. Recommendations for Improvement. Send comments and suggested improvements to this instruction on an AF Form 847, *Recommendation for Change of Publication*, through channels to 62 OG/CD-Antarctica, 100 Col Joe Jackson Blvd Ste 2069, Joint Base Lewis-McChord, WA 98438 62OG/[OGV@us.af.mil](mailto:OGV@us.af.mil). These recommendations will be reviewed by the 62 OG/OGV and forwarded to HQ AMC/A3V, IAW procedures in AFI 11-215, *USAF Flight Manual Program (FMP)* and MAJCOM Supplement.

**1.2. Mission Description.** Operation DEEP FREEZE (ODF) is the Department of Defense (DOD) inter/intra-theater air and surface logistical support of the United States Antarctic Program (USAP). It involves the deployment and redeployment of scientific and support personnel, resupply of South Pole Station, McMurdo Station, and numerous deep field research camps established by the National Science Foundation (NSF) Office of Polar Programs (OPP).

1.2.1. C-17A aircraft, aircrews, Aircrew Flight Equipment (AFE), and maintenance, satellite communications support personnel are tasked to perform airland and airdrop operations on the Antarctic continent in support of USAP programs on an annual basis.

1.2.2. C-17A crews from 62/446 OG at Joint Base Lewis-McChord are responsible for filling ODF taskings and managing the C-17 Aircrew Antarctic Training Program IAW AFI 11-2C-17V1. If another wing is tasked to conduct the ODF mission, crews must be ODF trained and certified IAW AFI 11-2C-17V1 Aircrew Antarctic Training Program.

1.2.3. Deployed aircraft and personnel are assigned to the 304 EAS, the C-17A Expeditionary Airlift Squadron based at Christchurch, NZ, subordinate to the 13 Air Expeditionary Group (AEG), Joint Task Force - Support Forces Antarctica (JTF-SFA).

1.2.4. ODF operations are divided into three time periods: Winter Flying (WINFLY), Main Season/Redeploy, and Intra Season.

#### 1.3. Specialized Terms.

1.3.1. Ice Certification – The certification of an ODF crew member is conducted in accordance with the 62/446 OG ODF C-17A Antarctic Training and Certification Guide and syllabus. Additional certifications exist for WINFLY, airdrop and NVG operations. Certified crews will be referred to as “Ice Certified.” These certifications are tracked in TMS and are recorded on the letter of X’s.

1.3.2. WINFLY – The period of ODF operations that occur during the Austral Winter, usually in August, which brings in the advance team of personnel to prepare the airfields and

McMurdo station for main season operations. (WINFLY requires a separate aircrew certification).

1.3.3. Main Season – The period of ODF operations that occur during the main operating sea-son, usually from early October thru early March. The majority of cargo and personnel airlift occur during this period.

1.3.4. Intra Season – The period between the end of the Main Season and the beginning of WINFLY. C-17A crews may be called upon to conduct emergency operations during this period.

1.3.5. Joint Task Force – Support Forces Antarctica (JTF-SFA) – The standing JTF that is tasked with managing the DoD operational and logistical support to the USAP.

1.3.6. Mission Commander – An Ice certified field grade officer responsible for executing C-17 ODF missions. Position is normally held by the 304 EAS/CC but may be delegated as required.

1.3.7. Point of Safe Return (PSR) – An enroute point between Christchurch and McMurdo Station where the Aircraft Commander must make the decision to proceed to McMurdo Station or return to Christchurch based on weather conditions at McMurdo Station. Continuing past the PSR commits the aircrew to land at McMurdo regardless of weather conditions.

1.3.8. Pegasus Ice Runway – The compacted hard surfaced white ice runway built on the permanent Ross Sea Ice Shelf approximately 8 miles from McMurdo Station. This runway can be made available year round.

1.3.9. Annual Sea Ice Runway – The temporary runway built on the annual sea ice in McMurdo Sound. This runway is constructed each season on a new site over frozen sea water and is approximately 2 miles from McMurdo Station. This runway is only available when the sea ice is thick enough to support aircraft operations, usually from early October thru early December.

1.3.10. OPCON – The authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, designating objectives, and giving authoritative direction necessary to accomplish the mission.

1.3.11. TACON – The command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned.

1.3.12. Joint Operations Area – JTF-SFA primary area of operations is below 60 S latitude and within the country of New Zealand.

#### **1.4. Command, Control, and Communications.**

1.4.1. Command relationships are detailed in AFI 11-2C-17V3, Chapter 2, the JTF-SFA Operations Order for ODF, and the 18 AF ODF EXORD.

1.4.2. OPCON of deployed C-17As in support of ODF will be retained by USTRANSCOM. TACON is transferred to USPACOM upon arriving in the Joint Operations Area (JOA) and will be relinquished when departing the JOA.

1.4.2.1. C-17As deployed to support ODF are organized as the 304 EAS and are TACON to the 13 AEG, subordinate to the JTF-SFA.

1.4.3. Plain (non-secure) communications are used for in-flight operations. HF, SATCOM and Iridium text capability are utilized for ODF communications when out of VHF range.

1.4.4. C-17A crewmembers are not required to carry COMSEC materials on missions between Christchurch, NZ and Antarctica.

### **1.5. Mission Planning, Briefings, and Guides.**

1.5.1. A formal training day will be conducted at the beginning of each deployment rotation. Crews will be trained IAW the 62/446 OG ODF C-17 Antarctic Training and Certification guide and syllabus. Support personnel will utilize established continuity guides for operations. The 62/446<sup>th</sup> DEEP FREEZE Program office may produce ODF-specific inflight guides or training products to aid members in mission accomplishment. These guides will be approved by the 62/446 OG commanders.

1.5.2. Pre-mission aircrew, weather, and Mission Commander briefings will be conducted prior to each ODF mission. Briefings will be conducted IAW current AMC briefing guides and may be augmented with the 304 EAS briefing guides.

1.5.3. ODF aircrew flight planning, flight management and weather support will be provided by SPAWAR Systems Center, Charleston, SC, the designated ODF military weather service provider.

### **1.6. Aircrew Management.** Crew management will be IAW AFI 11-2C-17V3, Chapter 3, and the following.

1.6.1. Aircrew Qualification. The Aircraft Commander and primary loadmaster for all missions to Antarctica will be Ice Certified. **NOTE:** During WINFLY, the Aircraft Commander and primary loadmaster positions will be WINFLY certified. **NOTE:** Ice instructors will be provided for upgrading pilots & loadmasters.

1.6.2. Crew Complement. An Ice crew normally consists of 4 pilots, 4 loadmasters and 2 flying crew chiefs. The Mission Commander may adjust the crew size based on scheduling and mission requirements.

1.6.3. Alerting Procedures. Ice crews are alerted by the Mission Commander 3+45 hours prior to scheduled takeoff time to allow 1 hour for reporting and 2+45 hours for mission preparation. 304 EAS personnel will use the DEEP FREEZE C-17A Sequence of Events (See [Attachment 4](#)).

1.6.4. Flight Duty Period (FDP). Aircrews will assume all days are augmented unless specifically told otherwise by the Mission Commander prior to entering pre-mission crew rest that they will operate basic. The Mission Commander may approve flights with basic crews based on mission and scheduling requirements.

1.6.5. Training FDP. Comply with AFI 11-2C-17V3. ODF training missions normally include an annual NVG and airdrop Off Station Trainer (OST). Any additional crew duty day extensions must be requested and approved by 18AF/CC.

### **1.7. ODF Aircraft Operating Restrictions.** Aircraft operating restrictions will be IAW AFI 11-2C-17V3, Chapter 4. Christchurch is considered Column A for missions departing for

Antarctica. Aircraft returning to Christchurch will be Column B. Departures from Christchurch to other locations will revert to Column B. ODF missions launching to Antarctica will have the following additions:

1.7.1. Ignition channels A and B will be fully operational.

1.7.2. All non-mission essential equipment will be removed from the aircraft.

1.7.3. The APU will be operational.

1.7.4. Oxygen. Oxygen on board for takeoff must be sufficient to accomplish the planned flight from the point of safe return (PSR) to a suitable recovery base, should oxygen be required. Calculate crew requirements using the 100 percent Oxygen Duration Chart in the flight manual. Calculate crew and passenger requirements based on flight at FL 250 from the PSR to the nearest suitable recovery base.

1.7.4.1. EPOS is the primary emergency oxygen source for palletized seats. Calculate EPOS oxygen supply at 60 minutes for seated passengers. Passengers in palletized seats require one EPOS for every hour of flight from the PSR to a suitable recovery base. One EPOS will be stowed under each seat. The additional EPOS may be kept in the Survival Equipment Locker and distributed to passengers following the emergency. **NOTE:** The Mission Commander (with Aircraft Commander concurrence) may allow exceptions to the requirements listed in **paragraphs 1.7.1** thru **1.7.3** based on operational need.

**1.8. ODF Specific Waivers.** The following waivers are granted for AMC C-17A aircraft supporting Operation DEEP FREEZE missions or training sorties.

1.8.1. Parachute Waiver. In an effort to maximize available allowable cabin load (ACL) and fuel load, C-17A missions supporting ODF are authorized to operate without parachutes and associated survival kits on board the aircraft. The additional space generated will be used to store specialized cold weather gear and anti-exposure suits required for the mission. Parachutes will be removed and stored at home station. Restraint harnesses will be utilized for ODF airdrop operations.

1.8.2. Life Raft Overflow Waiver. C-17A missions supporting ODF are authorized to operate over water utilizing the overload capacity of 69 personnel per life raft versus the standard 46 personnel per life raft on active legs.

1.8.3. Approval for operations on unlit runways. AFI 11-202V3, paragraph 5.12.1 requires MAJCOM/A3 approval to operate on runways that do not have lighting but are equipped with reflective markers. ODF NVG certified aircrews are authorized to operate on Pegasus Runway utilizing NVGs and High Intensity Retro-Reflective, Heliport/Runway Identification Markers (HIRRRIM) with the restrictions published in chapter 4 of this document. The 304 EAS/CC or designated Mission Commander will inform AMC/A3V prior to mission execution that operations are being conducted IAW with this approval.

1.8.4. Aircraft Rescue and Fire Fighting (ARFF) Operations. C-17A aircraft supporting ODF missions to McMurdo are authorized to operate with 5 of 6 available ARFF vehicles in service. This reduced number will still meet the Critical Level of Service (CLS) category capability for sustained C-17A operations. The 304 EAS/CC or Mission Commander will inform the Aircraft Commander and must notify 618 AOC (TACC)/XOZ if operations are being conducted IAW this waiver. Operations under this waiver are not approved if less than

5 vehicles are available or if ARFF falls below CLS. If ARFF support falls below CLS, the mission will be rescheduled or a new waiver will be required IAW AMCI 11-208, Chapter 10.

1.8.5. AFI11-231 Door Bundle Airdrop Speed Waiver. Due to the high Mean Sea Level drop altitudes (10,000-12,000 feet) and estimated aircraft weight, minimum aircraft maneuvering speeds for the C-17A are estimated to be between 142-147 KCAS for airdrop configuration. Normal door bundle procedures utilize static line personnel airdrop procedures at airdrop airspeeds between 127-133 KCAS. This waiver allows door bundle aerial delivery from a C-17A using high altitude personnel configurations with airspeeds up to but not greater than 150 KCAS and bundle weights not to exceed 400 pounds. Reference TO1-C-17A-1-1 Figure 1-12 for expected planning stick shaker speeds.

## Chapter 2

### AIRLAND OPERATIONS

**2.1. Mission Commander Launch Decision.** The Mission Commander will make the mission launch decision based on weather, aircraft status, runway status, aerospace ground equipment status and user requirements. The Mission Commander will utilize the Airfield, Services, and Aircraft Go/No-Go Decision Matrix (Attachment 3) and the Weather Go/No-Go Decision Matrix (Attachment 4) to aid in this decision.

2.1.1. At any time during the launch sequence or after the aircraft has launched, the Mission Commander may cancel, delay, or recall the mission as conditions warrant.

**2.2. Christchurch Launch Weather Minimums.** Specific minimums have been developed for ODF missions in an effort to mitigate risk and prevent unsafe operations in an inhospitable environment.

2.2.1. Minimum weather to launch routine ODF mission from Christchurch to McMurdo are 1,500 ft ceiling and 3 SM visibility for ETA +4 hours at McMurdo. If the weather does not support these minimums, the mission will be delayed or cancelled until weather conditions improve. **NOTE:** If an emergency condition exists requiring weather conditions below those outlined in **paragraph 2.2.1**, ceiling and visibility may be lowered IAW AFI 11-2C-17V3. The 304 EAS/CC (or designated Mission Commander) will determine if lower minimums are acceptable after accomplishing a thorough ORM review and obtain approval from 18 AF/CC through 618 AOC (TACC)/XOZ.

2.2.2. The 304 EAS/CC (or designated Mission Commander) will consider weather trends, recent observations at origin and destination, and forecast temporary weather conditions when making launch decisions. Of primary concern is preventing PSR turn around due to weather as well as ensuring departure weather capability out of McMurdo.

**2.3. Point of Safe Return Fuel Planning.** The PSR is the furthest point along the flight path from Christchurch to McMurdo where the aircraft has enough fuel to turn around and divert to Christchurch if the weather at McMurdo is below minimums. The PSR can be overhead McMurdo or up to a maximum of 60 minutes from landing depending on cargo and fuel load. Upon arriving at the PSR, the Aircraft Commander must decide to either proceed to McMurdo Station or return to Christchurch. This decision is based on several factors to include current and forecast weather, aircraft condition, airfield status, and reliable communications.

2.3.1. C-17A aircraft without extended range fuel tanks will always load a maximum fuel of approximately 180,000 pounds. For C-17As with extended range fuel tanks, the amount of fuel will be determined by PSR distance and mission requirements.

2.3.2. C-17A missions will be planned utilizing a maximum fuel load with an ACL of 100,000 pounds on all missions. Depending on mission needs, an ACL greater than 100,000, but less than 120,000 pounds, requires Mission Commander approval. ACL in excess of 120,000 pounds significantly affects PSR and requires 618 AOC (TACC)/XOZ approval.

2.3.3. The PSR is based on a point determined by the mission computer. The PSR allows the aircraft to return to Christchurch (or other designated alternate) with minimum required fuel.



If in the view of the Aircraft Commander more fuel is required when returning from PSR, the PSR will be adjusted back (farther from McMurdo).

2.3.4. Once past PSR, the crew is committed to land at McMurdo regardless of conditions because insufficient fuel exists to return to a recovery/alternate airfield.

## **2.4. Point of Safe Return Weather Minimums.**

2.4.1. To proceed beyond the PSR, the Aircraft Commander must have the following:

2.4.1.1. The McMurdo weather at or above a forecast of 1,500 ft ceiling/3 SM visibility at ETA plus 1 hour. **NOTE:** With Mission Commander approval, if the aircraft has sufficient fuel to fly a straight-in IAP, execute a missed approach, climb to enroute altitude, and return to Christchurch with holding and divert fuel, the aircraft commander may elect to continue past PSR with forecast weather of 1,000 ft ceiling/3 SM visibility at ETA plus 1 hour.

2.4.1.2. A PSR forecast will be obtained no earlier than 60 minutes prior to PSR. The PSR forecast provides specific weather conditions expected at ETA and will not contain any temporary conditions.

2.4.1.3. The PSR forecast will contain sky condition, visibility, weather, surface wind (Grid), runway air temperature, runway dew point, and altimeter setting. Communication with McMurdo Weather may be direct or relayed through other aircraft or stations, or via Iridium phone voice or text if SATCOM or radio communications are unavailable.

2.4.2. C-17A aircraft will reverse course at PSR if any of the following conditions exists at the McMurdo airfields.

2.4.2.1. Observed weather below 1,500ft ceiling/3 SM visibility (or 1,000 ft ceiling/3 SM visibility if meeting criteria in the note in [paragraph 2.4.1.1](#))

2.4.2.2. Crosswind limitations, corrected for RCR, are exceeded. (Observed or forecast).

2.4.2.3. Mooring chart wind limitations are exceeded (Observed or forecast).

2.4.2.4. NIL surface definition. **NOTE:** If a POOR surface definition is observed, runway lights, PAPI and navigation aid for the instrument approach must be operational.

2.4.2.5. TACAN not in service. **NOTE:** If observed weather at McMurdo exceeds 3,000ft ceiling/3 SM visibility and is forecast to remain greater than 3,000 ft ceiling/3 SM visibility for at least 2 hours after ETA, and if dual GPS with RAIM are available and operational, the mission may continue past PSR on the published GPS arrival to a visual approach to the field. If a certified RNAV approach is available, aircraft may continue past PSR with weather minimums of 1,500 ft ceiling/3 SM visibility with the TACAN not in service.

2.4.2.6. Negative communications, direct or relay, with McMurdo Center.

2.4.2.7. More than one inch depth of loose snow reported on the primary runway (Pegasus or the Seasonal Ice Runways). **NOTE:** The Pegasus "White Ice" Runway is covered with a snow layer of 3-5 inches in depth that is compacted to the approximate

consistency of concrete. This compacted snow layer does not restrict aircraft operations to the runway.

2.4.3. Two sources of air for engine start are not available (APU and air cart) unless an ERO is planned.

**2.5. McMurdo Arrivals and Instrument Approach Procedures.** McMurdo airfields are certified for IMC operations, however they lack normal instrument runway markings and lighting. Aircrews flying into these airfields must be Ice certified IAW AFI 11-2C-17V1 to operate safely in this environment.

2.5.1. Instrument arrival and approach procedures are produced and flight-checked by the FAA each season and will be made available to all ODF aircrews.

2.5.2. Due to operational necessity, C-17 aircrews may need to perform flyability checks on new IAPs at the beginning of the ODF season, prior to the arrival of FAA flight check personnel. These flight checks will be conducted in VMC and IAW AFI 11-230. An AF IMT 3992 will be submitted to the 13 AEG/CC for validation and approval.

**2.6. Ground Operations.** C-17A aircrews will be trained and certified on all non-standard ground equipment at McMurdo, cargo loading operations and the use/wear of Extreme Cold Weather (ECW) gear.

**2.7. McMurdo Area Airfield Departure Weather Minimums.** There are no departure alternates meeting AFI 11-2C-17V3 requirements for C-17A aircraft at McMurdo. Aircrews must plan to use the McMurdo departure airfield as the only emergency return option available to them. Aircrews will plan to depart McMurdo airfields with weather minima of 1,500 ft ceiling/3 SM visibility to the maximum extent possible.

2.7.1. Crews will thoroughly analyze current and trend weather data when departure weather is observed or forecasted to be below 1,500 ft ceiling/3 SM visibility. If departure weather below 1,500 ft ceiling/3 SM visibility is caused by a temporary event, the crew should wait until conditions improve before departing.

2.7.2. If, after thorough analysis of weather conditions, the Aircraft Commander determines that waiting to obtain 1,500 ft ceiling/3SM visibility for departure is impractical, a departure is authorized with weather minimums of 1,000 ft ceiling/2 SM visibility with Mission Commander approval.

2.7.3. If 1,000 ft ceiling/2SM visibility for departure is not attainable and the crew does not have enough FDP remaining to wait for improved weather conditions, the Aircraft Commander will contact the Mission Commander to determine lowest weather departure minimums for safe operations. The Mission Commander may approve departure minimums below 1,000 ft ceiling/2 SM visibility, but not lower than the lowest compatible approach minimums. The approval will be situational dependent based on a Mission Commander thorough ORM re-view, to include as a minimum, aircrew experience, actual weather conditions and weather trends, crew duty day and comparing risk associated with departing McMurdo under IMC versus keeping a C-17A on the surface for an extended period of time. The Mission Commander will obtain launch approval from 18 AF/CC through 618 AOC (TACC)/XOZ with coordination with AMC/A3V.

## Chapter 3

### AIRDROP OPERATIONS

**3.1. General.** This chapter outlines specific procedures unique to performing airdrop operations on the Antarctic continent and the surrounding waters. Airdrop is the only means of reaching the South Pole Station or other parts of the Antarctic interior during the Austral Winter period. Pilots performing airdrops at or near the South Pole must be Ice airdrop certified. Pilots performing airdrops in other areas of the continent, or in the surrounding waters, must only be Ice certified.

**3.2. Christchurch Airdrop Launch Weather Minima.** All weather minima listed in [Chapter 2](#) for airland operations apply to ODF airdrop missions. However, the Mission Commander will also consider the following when making the Go/No-Go decision:

3.2.1. Due to the distance between Christchurch and the South Pole, McMurdo Station must be utilized for refueling prior to conducting the airdrop unless an air refueling is planned. The Mission Commander will ensure weather at McMurdo is suitable to allow the refueling stop and departure, as well as providing emergency divert capability before and after the drop.

3.2.2. McMurdo weather must be 1,500 ft ceiling/3 SM visibility for ETA +4 hours for fuel stop return time.

3.2.3. Drop Zone weather must be 1,500 ft ceiling/3 SM visibility for ETA +1 hour.

3.2.4. Weather at McMurdo must be 1,500 ft ceiling/3 SM visibility during the time frame when an emergency divert to McMurdo from the drop zone might be needed.

**3.3. Mission Computer Anomalies.** Due to the rapid convergence of lines of longitude near the South Pole, the aircraft mission computer may give a false representation of where the aircraft is in relation to the ground. Additionally, there may be divergence between the pilot and copilot's MFDs in relation to the run in course.

3.3.1. Pilots must complete the Ice airdrop certification training prior to dropping on or near the South Pole (below 85 degrees S latitude). This training will include a sortie that conducts an actual or dry pass over one of the South Pole Drop Zones. All South Pole airdrops must be conducted with a visual back up to verify aircraft position and mission computer alignment prior to the release point.

**3.4. Drop Zone Surveys and Markings.** The JTF-SFA is responsible for providing drop zone surveys, if available. If a survey is not available, drop zone coordinates and terrain data for the surrounding area will be provided. A communications plan and drop zone markings will be relayed to the Mission Commander and provided to the crew prior to mission execution. The Mission Commander will ensure a safety of flight review is conducted for the drop zone IAW AFI13-217.

**3.5. Airdrop configurations.** The nature of the airdrop will vary based on customer requirements. Configurations for airdrop cargo may include Heavy Equipment, Container Delivery System or Door Bundles. In most emergency situations, only a small amount of cargo will be required to be airdropped as a Door Bundle.

3.5.1. Depending on conditions, it may be necessary to fly Door Bundle airdrops above AFI 11-231 speeds. Refer to [paragraph 1.8.5](#) of this document for a description of the approved Door Bundle airdrop airspeed waiver.

**3.6. Emergency Airdrop Operations.** If an emergency condition exists requiring airdrop operations in the JOA with weather conditions below those outlined in [paragraph 3.3.1](#), ceiling and visibility may be lowered and the wind component may be increased IAW AFI 11-2C-17V3 and AFI 13-217 . The 304 EAS/CC or designated Mission Commander will determine if lower minimums or increased wind component are acceptable after accomplishing an applicable ORM review and obtain approval from 18 AF/CC through 618 AOC (TACC)/XOZ.

## Chapter 4

### NIGHT VISION GOGLES (NVG) OPERATIONS

**4.1. General.** This chapter provides guidance for C-17 Night Vision Goggle (NVG) operations on Pegasus runway in support of the NSF mission on the Antarctic continent during periods of darkness. The utilization of NVGs provides year-round capability to McMurdo offering a valuable means to evacuate personnel or deliver emergency supplies during the Austral Winter.

4.1.1. Runway markings. Due to the lack of runway edge lighting and the minimal contrast between the runway edge and the surrounding ice, High Intensity Retro-Reflective Runway Identification Markers (HIRRRIM) are utilized to aid in runway identification. These markers reflect the light from the aircraft's landing lights to aid in runway edge identification. The aircraft must be aligned within 8 degrees of centerline to ensure reflectivity.

4.1.2. The Mission Commander will coordinate with Pegasus Airfield Manager to ensure that HIRRRIM are installed properly and will brief the aircrew on the marker configuration.

**4.2. Mission Planning.** Crews will be notified by the Mission Commander if NVG operations are required. Crews will deploy with an appropriate number of NVGs to include spares as determined by the Mission Commander. Life support personnel will deploy with necessary maintenance equipment, Hoffman testers, and an eye lane.

**4.3. Christchurch NVG Launch Weather Minima.** All weather minima listed in [Chapter 2](#) for airland operations apply to ODF NVG missions. The Mission Commander will also consider airfield instrument approach procedure availability, airfield lighting and crosswind component for the launch determination.

#### **4.4. NVG Operating Restrictions.**

4.4.1. Pilots performing a takeoff or landing at McMurdo on NVGs must be current and qualified as an Ice NVG pilot or be under the direct supervision of an Ice NVG IP.

4.4.1.1. NVG flight training will be conducted IAW the 62/446 OG ODF C-17 Antarctic Training and Certification guide and syllabus and AFI 11-2C-17V3, Chapter 9.

4.4.2. All airland PSR weather and minima guidance from [Chapter 2](#) of this document apply to NVG operations. In addition to minimum ceiling and visibility requirements of 1,500 ft ceiling/3 SM visibility for ETA + 1 hr, the airfield must have a fully functioning straight in instrument approach procedure, and runway end identifier lights or similar lead-in lighting.

4.4.3. Maximum cross wind component limitation for landing is 15 knots.

4.4.4. Due to the inherent degradation of NVG effectiveness in areas of precipitation, continuation past PSR is not permitted if observed or forecasted weather includes continuous or heavy snow showers. Operations are permitted during periods of light snow (-SN).

**4.5. Emergency NVG Operations.** If an emergency condition exists requiring NVG operations at McMurdo with weather conditions below those outlined in [paragraph 4.3](#), ceiling and visibility may be lowered and the cross wind component may be increased IAW AFI 11-2C-

17V3. The 304 EAS/CC (or designated Mission Commander) will determine if lower minimums and/or increased cross wind component are acceptable after accomplishing a thorough ORM review and obtain approval from 18 AF/CC through 618 AOC (TACC)/XOZ.

BURTON M. FIELD, Lt Gen, USAF  
DCS, Operations, Plans and Requirements

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 11-202V3, *General Flight Rules*, 22 Oct 2010

AFI 11-231, *Computed Air Release Point Procedures*, 31 Aug 2005

AFI 11-2C-17V1, *C-17 Aircrew Training*, 1 Jun 2012

AFI 11-2C-17V3, *C-17 Operations Procedures*, 16 Nov 2011

AFI 13-217, *Drop Zone and Landing Zone Operations*, 10 May 2007

AFI 11-230, *Instrument Procedures*, 30 Mar 2010

ETL 07-12, *Design Construction, Maintenance and Evaluation of the McMurdo Sound (Antarctica) Sea Ice Runway for Heavy Wheeled Aircraft Operations*, 24 Sep 2007

ETL 02-16, *Design Construction, Maintenance and Evaluation of the Pegasus Glacial Ice Runway for Heavy Wheeled Aircraft Operations*, 16 Oct 2002

CJCS Operation DEEP FREEZE EXORD, 31 Mar 2005

JTF-SFA Operations Order, Operation DEEP FREEZE, 15 Aug 2012 (Revised and reissued on an annual basis)

18 AF ODF EXORD (Revised and reissued on an annual basis)

US Antarctic Program Inter-Agency Air Operations Manual (Revised and reissued on an annual basis)

***Abbreviations and Acronyms***

**ACL**—ALLOWABLE CABIN LOAD

**AFE**—AIRCREW FLIGHT EQUIPMENT

**IAP**—INSTRUMENT APPROACH PROCEDURE

**JTF**—SFA—JOINT TASK FORCE, SUPPORT FORCES, ANTARCTICA

**NSF**—NATIONAL SCIENCE FOUNDATION

**NVG**—NIGHT VISION GOGGLES

**OPP**—OFFICE OF POLAR PROGRAMS

**PSR**—POINT OF SAFE RETURN

## Attachment 2

## ODF C-17A SEQUENCE OF EVENTS

Table A2.1. ODF C-17A SEQUENCE OF EVENTS.

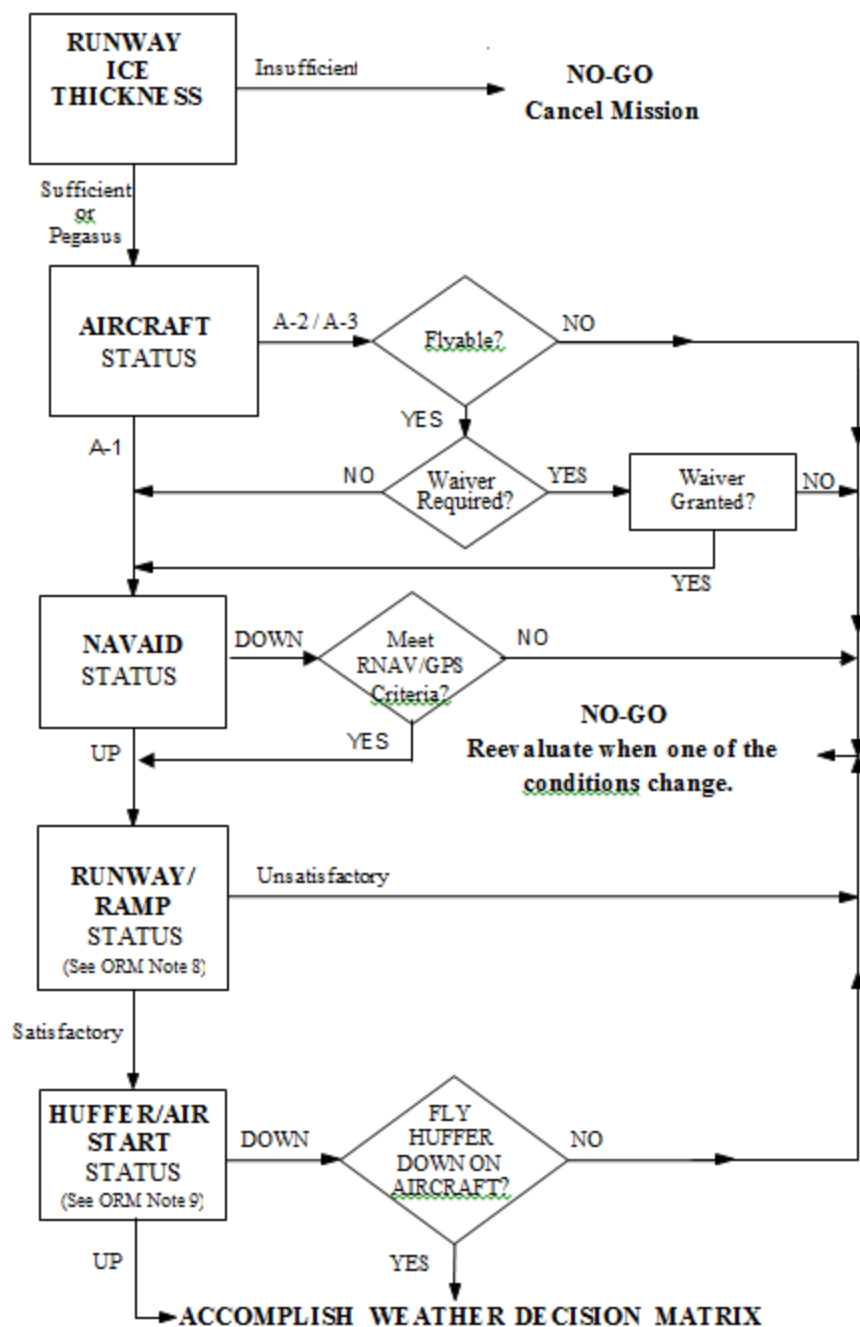
ACTIVITY	TIME TO TAKEOFF
Enter Crew Rest	16+00
WX Call to MC for Go/No-Go	4+40
WX Decision / APT Notified /ORM Complete	4+30
Crew Alert	3+45
Mx at Aircraft	3+00
Aircrew Show	2+45
Load Team and AFE at Work Stations	2+45
Pilot WX Briefing Ready / Airfield Brief Ready	2+30
Cold Weather Gear Available for Crew	2+30
Pilots Show at Base Ops / Initial WX / CFPs	2+30
Loadmasters Check Load and Load Plan at Cargo Yard	2+30
MEP Show for Crew Briefing	2+15
Crew Briefing	2+15
MX Begins Refuel	2+00
Pilots Complete WX Briefing/Flight Planning	2+00
Loadmasters/Copilots at Aircraft	2+00
Final Fuel to MX	2+00
AC at Aircraft	1+30
Refueling Complete	1+00
Cargo Loading Complete	1+00
Start Passenger Loading	1+00
Passenger Onload Complete	0+45
Aircrew at Stations	0+40
Engine Start	0+30
Block out from Parking	0+15
Takeoff from Christchurch	0+00
* SOE may be modified at the direction of the 304 EAS/CC (or Designated Mission Commander) based on operational necessity.	



## Attachment 3

## AIRFIELD, SERVICES, AND AIRCRAFT GO/NO-GO DECISION MATRIX

Figure A3.1. AIRFIELD, SERVICES, AND AIRCRAFT GO/NO-GO DECISION MATRIX.



## Attachment 4

## WEATHER GO/NO-GO DECISION MATRIX

Figure A4.1. WEATHER GO/NO-GO DECISION MATRIX.

